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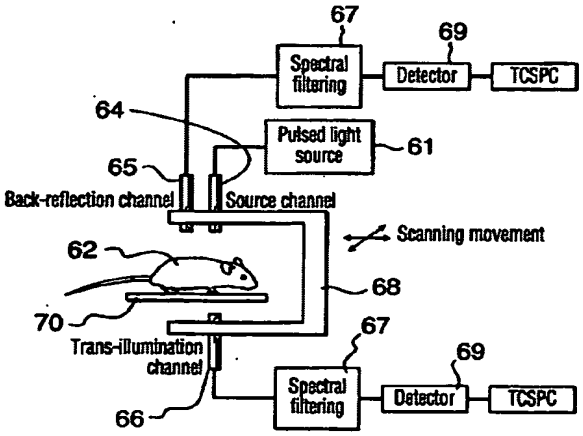
[Continued on next page]

(54) Title: A TIME-DOMAIN METHOD AND APPARATUS FOR DETERMINING THE DEPTH AND CONCENTRATION OF A FLUOROPHORE IN A TURBID MEDIUM



(57) Abstract: Methods and apparatuses for determining the depth and concentration of fluorophores in a turbid medium are disclosed. The method advantageously provides for a rapid estimation of the depth of the flurophore using characteristics of a temporal point spread function. The concentration of the flurophore can be determined using the method of the present invention by combining a calculated depth of the flurophore with a measurement of the intensity of the emitted fluorescence. The intensity can be accurately measured by the apparatus disclosed herein which combine back-reflection and trans-illumination geometries for the source of light injecting and detection.

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